

# THE CHEMIST

JULY 1950



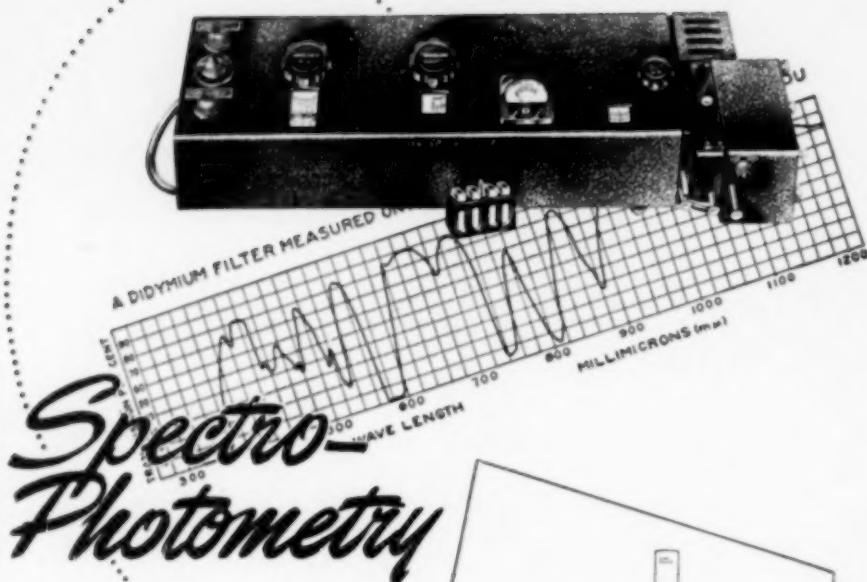
VOLUME XXVII No. 7



**DR. LINCOLN T. WORK**

*New A.I.C. President-Elect*

(See page 258)

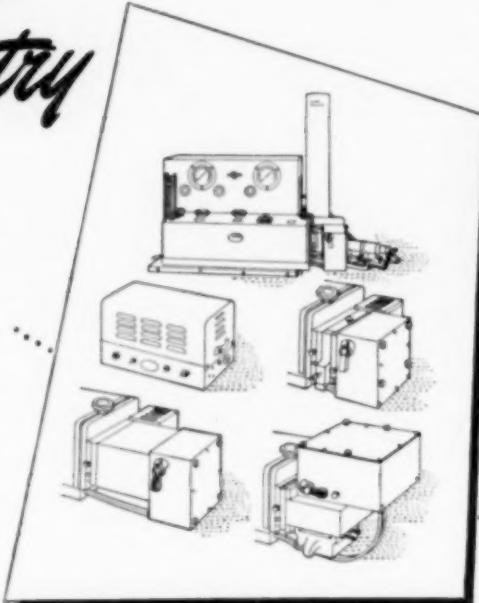


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# The CHEMIST

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## SCHEDULED FOR EARLY ISSUES

The Increasing Responsibilities of the Chemist, by Ralph Lamenzo, F.A.I.C.

The Chemistry of Intelligence, by Dr. Edward Podolsky

Award of Honorary Membership to Dr. James R. Withrow, F.A.I.C.

Award of Honorary Membership to Dr. W. E. Kuhn, F.A.I.C.

The Chemist's Responsibility as a Professional Man, by Dr. W. E. Kuhn, Hon. A.I.C.

Determination of Wages for Chemical Engineers and Chemists, by Dr. Robert S. Aries, F.A.I.C., and William Copulsky.

What the AIC Can Do for the Government Chemist, by Dr. J. David Reid, F.A.I.C.

What the AIC Can Do for the Industrial Chemist, by Dr. Simon Miron, F.A.I.C.

Chemists Over Forty-five, by Herbert F. Schwarz, F.A.I.C.

Employment Contracts, John A. Dienner, F.A.I.C.

The Chemist in Sales and Advertising, by Paul Slawter, F.A.I.C.

From Industry to Teaching, by John Happel, F.A.I.C.

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## COVER PICTURE

Dr. Lincoln T. Work, chosen President-elect of THE AMERICAN INSTITUTE OF CHEMISTS at its Annual Meeting, May 11th, is a consulting engineer located in the offices of Singmaster and Breyer at 420 Lexington Avenue, New York, N.Y.

Dr. Work received the A.B., Ch.E., A.M., and Ph.D. degrees from Columbia University, where he served as instructor, assistant professor, and associate professor until 1940. The Metal and Thermit Corporation then appointed him as its director of research and development, a post which he held until 1949.

Active for many years in professional societies, Dr. Work has served on the Council of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS and has been councilor-at-large of the national organization since 1947. He was chairman of the AIC Committee on Honorary Membership for the past two years and chairman of the Program Committee of the 1950 Annual Meeting. He is presently chairman of the Division of Industrial and Engineering Chemistry of the American Chemical Society. He has also been active in the American Society of Testing Materials; the American Standards Association; the Society of Chemical Industry (chairman of the American Section 1940-1942); the Electrochemical Society, and the New York Paint and Varnish Production Club.

Dr. Work accepted his election as AIC president-elect with the following statement:

"THE AMERICAN INSTITUTE OF CHEMISTS is a growing force in the professional life of the chemist, where it fills a very necessary place. I shall look forward to the opportunity for continued service to this organization in the post to which you have elected me. No doubt many important problems will arise during my tenure of this office and the presidency, not the least of which will concern employment and licensure. With the help of the membership, we shall endeavor to resolve any of these in your interest."

## EDITORIAL

### Let Us Rise Above the Average

**N**EWLY-ELECTED president J. Albert Woods of Commercial Solvents Corporation, in a recent talk before the Twenty-Year Club Dinner of the firm, stressed a design for accomplishment which deserves the consideration of every chemist, whether he works for a company or is working independently:

Mr. Woods stated, "The men and women with whom I have worked daily, will tell you that I get no satisfaction out of someone saying, 'We are holding our own.' If we cannot rise above the other fellow, do a better over-all job than our competitors, and improve our position year by year, then it's time for you and me to make room for those who will.

" . . . A company like ours, a job like yours and mine carries with it the responsibility of using our daily influence for the good of our fellow citizens and our country. We are false to ourselves and to our best instincts if we turn our backs on truth or close our eyes when it beckons . . .

"If you and I, along with our business are to grow and justify ourselves, if we are to earn a fair return—make better products and lead the procession, then you and I can

not afford the luxury of being average people.

"We must, by all means, avoid the habit of indecision. We must have an appetite for life. We must not be afraid to take a chance. We cannot acquire the habit of simply 'playing safe.'

"We hear much these days of security — but the joy of life is in participation—not merely in safety and security. Let's give our imagination a chance. Ideals come from mental images. All worth-while goals are first mental images, then ideals and finally, accomplishments.

"God made no blueprints for our lives, but deep down within each of us lies God's hidden power. The measure of our success will be our ability to use that power to convert our ideals into actualities . . .

"Let's rise above the average. Let's beat the ordinary which simply seeks safety and security. Let's seek help from science and God, but let's help ourselves to use the opportunities which will arise on every side to do a better job than anyone else in our field, and if we win nothing more, we will have the pride of accomplishment and a self-respect which lets us sleep at night."

### IRI Elections

New officers elected at the 13th Annual Meeting, April 26-28, of the Industrial Research Institute, Inc., are: President, Dr. C. F. Rassweiler, F.A.I.C., vice president for research and development, Johns-Manville Corporation, New York, N.Y.; Vice-President, Dr. Harry N. Stephens, director of research, Minnesota Mining and Manufacturing Co., St. Paul, Minn.; and Directors, Dr. Allen Anrums, vice president, Marathon Corporation, Rothschild, Wisconsin; James A. Stewart, vice president in charge of research and development, American Can Company, New York, N.Y. C. G. Worthington continues as full time secretary-treasurer.

The 1950 medal of the IRI, awarded for outstanding accomplishment in the management field of industrial research, was presented posthumously to Dr. Frank B. Jewett, who died last November. The medal was accepted by his son Frank B. Jewett, Jr.

### Water Resources

THE AMERICAN INSTITUTE OF CHEMISTS has received a letter from The President's Water Resources Policy Commission, Washington 25, D. C., asking that "all interested individuals, organizations . . . present their views as to the elements of a sound water resource policy for the nation, together with any supporting

facts which should be considered." Replies "should be designed to assist the Commission in its consideration of:

- "(a) The extent and character of Federal Government participation in major water-resources programs;
- "(b) an appraisal of the priority of water-resources programs from the standpoint of economic and social need;
- "(c) criteria and standards for evaluating the feasibility of water resources projects; and
- "(d) desirable legislation or changes in existing legislation relating to the development, utilization and conservation of water resources."

Water as a chemical resource is of the greatest importance to chemists. Members of THE AMERICAN INSTITUTE OF CHEMISTS who have specific information of value to the Commission are urged to send this to the AIC for transmission in the form requested by the Water Resources Policy Commission.

### Snell Purchases Supplee Laboratories

Dr. Foster D. Snell, F.A.I.C., president of Foster D. Snell, Inc., has announced that his firm has purchased the laboratories of the G. C. Supplee Research Corporation, Bainbridge, New York.

# A Pension Plan Survey

Dr. Carl H. Rasch, F.A.I.C.

Research Director, Riverside Chemical Company, North Tonawanda, N.Y.

AT THE December meeting of the Niagara Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, it was unanimously decided to conduct a survey of pension plans which prevail among chemists in up-state New York. It was intended that this should lead to similar surveys by other chapters and that the results be published in *THE CHEMIST*.

Most companies are proud of their pension plans, but for the purpose of this survey it was considered unnecessary to associate the names of companies or institutions with their respective pension plans, and so those to whom the questionnaire was sent were requested not to sign or state the name of the company.

The questionnaire which was drawn up by a committee of the Niagara Chapter was sent only to members of the Chapter (this was recently extended to include the State as far east as Albany) and to only one chemist in each company or institution, so that a total of seventy-five questionnaires were mailed.

Forty-four replies were received, which is a 65 per cent return. The returned questionnaires were not always completely filled out and are so indicated in the tabulation.

That the question of Pension Plans is of timely interest is shown by a Pension Clinic held recently at Hotel Lafayette, Buffalo, for business executives, attorneys, industrial relations and personnel men. The effect of "Impact of Pensions" on the stock market is discussed in the March first issue of *Investors Reader*.

The April issue of *Readers Digest* has an article, "The Mirage of Pensions," which points out the fact that "the older worker's employment is threatened by the very pension plan to which he looks for security;" also that a funded pension plan is the better one. *Modern Industry* for March discusses the various types of pension plans in considerable detail from both the employers' and employees' viewpoints.

## Tabulation of Questionnaires on Pensions Plan for Chemists

1. Is your employer  
(a) a Company  
(b) an Institution

Answers:

38—a Company  
5—an Institution  
1—Self-employed

2. Does the Company (or Institution) have a pension plan for its professional chemists?

Answers:

37—Have pension plan  
7—No plan

3. What age must the chemist *usually* be before he is entitled to receive the pension?

Answers:

8—Blank  
1—Age not set  
1—55 years with consent of Company  
1—60 years  
32—65 years  
1—70 years, depends on health

4. Is it mandatory to retire at the age given in answer to Question No. 3?

Answers:

6—Blank  
24—No  
14—Yes

Note: Mandatory at 70.  
May remain only at Company consent at 60.

5. May the age given in answer to Question No. 3, be lower, if the chemist has served the employer for an unusually large number of years?

Answers:

7—Blank  
20—Yes  
14—No

(a) If yes, give age

Answers:

4—Blank  
1—Not set  
1—50 years  
9—55 years  
3—30 years  
1—65 years  
1—70 years

(b) Requisite number of years

Answers:

1—Company consent in special cases at lower pension  
1—Option of individual  
2—1 year  
2—15 years  
1—20 years  
2—25 years  
2—25 or more years  
2—30 or more years

6. Does the plan call for a minimum number of years of service before the chemist is eligible to receive the pension?

Answers:

7—Blank  
27—Yes  
10—No

If yes, what is the minimum years of service?

Answers:

2—Blank  
5—1 year  
1—3 years  
4—5 years  
2—10 years  
6—15 years  
2—20 years  
4—25 years

1—28 years for full pension

7. Does the chemist contribute part of his earnings in order to receive the pension?

Answers:

7—Blank  
19—Yes  
18—No

If yes, state in place below how the contribution is calculated.

Answers:

1—Blank  
2—Based on salary  
1—Employee, 6% of annual salary; Institution 9% of annual salary.  
2—Employee, 5%; Employer, 5%.  
1—Employee, 50%; Employer, 50%.  
1—Chemist contributes to Retirement Income Plan. Pension is in addition to this.  
2—2.5% of earnings up to \$250.00 per month; 5% of earnings over \$250.00 per month. Company contributes an equal amount.  
1—Percentage above \$3,000 per year.  
1—2% of \$250.00 per month; 4% of balance of basic pay.  
1—\$2.00 per month plus 3% of difference between salary and \$110. On retirement he received  $\frac{1}{2}$  of what he contributed times years of service. Employer pays the difference.  
1—Company pays all of past service. Employee pays approximately 40% of current costs.  
1—3% of Compensation up to \$3,000 plus 5% over \$3,000.

## A PENSION PLAN SURVEY

1—Varies with individual case.  
1—4% of salary over \$3,000 divided in 12 equal amounts.  
1—6% of amount by which monthly salary exceeds \$216.67

8. Does the size of pension vary with  
(a) Number of years of service?

Answers:

10—Blank

2—No

32—Yes

(b) Salary received during years of service?

Answers:

10—Blank

34—Yes

If answer is yes, give the relationship between the size of pension and years of service and/or salary received and state whether primary social security is deducted in whole or part of pension.

Answers:

4—Blank

22—No

4—Yes

4—½ Social Security deducted

9. If the chemist has served for the minimum period necessary to render him eligible to receive a pension, but because of failure in health he must cease working before the usual age at which he would be entitled to receive it, may he still receive a pension?

Answers:

10—Blank

3—Do not know

5—No

26—Yes

If yes, state below how he would receive it.

Answers:

1—Group Insurance or sum paid in  
1—Insurance Plan  
3—Depends on case  
1—1.1% monthly pay equals pension. Minimum pension equals 45 plus (2/3 average pay times years of service)  
1—Pension and Insurance

1—If between 55 and 65 and 20 years of service  
1—Yes, reduced scale based on actuarial table

2—Based on actuarial tables

1—Pensioned if ill and long service

1—If age and service are less than 80, paid benefits for a period; if 80 or more, paid for life

1—Based on paid-in amounts

1—Insurance policy is available

1—When length of service is established, amounts are received for life on actuarial tables

1—1% average salary for last ten years times years employed less 1/2 of average salary for last 10 years times years person is under 65 years of age.

1—No pension until 65 without consent of Company, minimum is 55 years

1—Same for whole Company

1—Pro-rated

1—Reduced pension

10. Any other information not covered in the foregoing.

Answers:

10—Blank

1—Outside Insurance Company and deals with individual directly.

1—For all salaried workers. Company can change plan.

1—Entirely Insurance—pension hospitalization for self and family—informed yearly of annuity.

1—Actuarial tables used

1—Pensions are handled on a paternalistic basis.

2—All employees handled same way

1—Pension plan not joinable until 25 or pension to begin before 50

1—Early retirement at reduced monthly rate

1—Social Security not considered, same for all employees

1—½ Social Security when 65

1—Plan up for revision in 1950

1—Actuarial tables used ( $\frac{1}{2}$  by employer;  $\frac{1}{2}$  by employee)  
1—No compulsory age limit set.

Men are shifted to less strenuous work and used in advisory capacity

1—Policies are issued by Life Insurance Company; none of assets revert to Company. Cannot borrow against policy.

The discussion following the presentation of the tabulation at the February meeting of the Chapter brought forth the following points:

1. Government handling of pensions while perhaps the safest is not necessarily the most efficient.
2. Small companies may not be able to afford pension plans and may thus be stifled and may cut down opportunities for employment.
3. In actuality, a chemist in a small company may have more security than in a large company, due to the fact that his experience may be more vital to its operations.
4. In all dealings with pension plans, chemists must think and act professionally.
5. In all pension plans, the money contributed by the employer can be regarded as added compensation. Some chemists would prefer to receive it in salary and operate their own annuity plan.
6. Pension plans at present appear to offer security; however, future inflation could well negate considerable of its value.

7. Methods in which a chemist may gain security at old age.

- (a) Refusal to accept positions which insist on retirement at age 60.
- (b) The chemical profession cannot afford to retire men at 60, as they are too valuable, and should be used in advisory capacities where experience is most valuable.
- (c) In order to give younger men opportunity for advancement, older men must retire.

The Chapter was in agreement on the following points:

- (1) As a principle, Retirement Plan is an asset.
- (2) Employee should contribute with the company.
- (3) The Pension Plan should be with an outside insurance or financial institution, and should be of the vested rights type.
- (4) Opposed to complete compulsory retirement.
- (5) Retirement should be by mutual consent.
- (6) Voluntary age for retirement should be permissible at 30 years' service or 60 years old.

## A PENSION PLAN SURVEY

(7) Minimum of 5 years' service and 35 years old before joining a pension plan.

In conclusion, it was brought out that as the life span is increased, more thought and effort must be given to the problem of making it possible for older people to be happy and contented.

### Applezweig Opens Consulting Laboratory

Norman Applezweig, F.A.I.C., formerly general manager and technical director of Hygrade Laboratories, Inc., has opened a consulting laboratory at 31 South Street, New York, N.Y., to carry on research relating to the development of new biochemical products and processes.

#### Reprinted

"The Responsibilities of the Community to Its Chemists" by Dr. Otto Eisenschiml, F.A.I.C., (The Chemist, Nov. 1949), has been reprinted in *The Branched Chain*, East Tennessee Section publication of the American Chemical Society.

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Foster D. Snell, F.A.I.C., president of Foster D. Snell, Inc., New York chemists and engineers, announces that his organization has recently affiliated with Albert C. Barrat, 54, Avenue de Neuilly, Neuilly, Seine, France, to expand further their services to both foreign and domestic clients.

### New England Chapter Organized

The New England Chapter of THE AMERICAN INSTITUTE OF CHEMISTS held its first organization meeting at a luncheon, March 20th, at the Engineers Club in Boston, with twenty-eight in attendance.

Dr. Gustavus J. Esselen, vice president of United States Testing Company, Inc., in charge of the Esselen Research Division, was the guest of honor and was cited by President Lawrence H. Flett, AIC, who presented him with Honorary AIC Membership in recognition of his attainments in the field of chemistry and human relations.

John B. Calkin, director of the Department of Industrial Cooperation at the University of Maine, presided at the meeting. After a few informal remarks by Dr. Esselen, Dr. R. K. Carleton of Rhode Island State College, chairman of the Nominating Committee, presented nominees for Chapter officers. John J. Healy, Jr., assistant general manager, Merrimac Division, Monsanto Chemical Company, was elected chairman, and James W. Perry, of the Department of Chemistry, Massachusetts Institute of Technology, was named secretary-treasurer.

## Dr. Esselen Awarded Honorary AIC Membership

Dr. Gustavus J. Esselen, vice president of United States Testing Company, in charge of the Esselen Research Division, Boston, Massachusetts, was presented with Honorary Membership in THE AMERICAN INSTITUTE OF CHEMISTS, at the first meeting of the Institute's newly created New England Chapter, held at the Engineers' Club, Boston, March twentieth.

At the luncheon meeting, Dr. Esselen received the Certificate of Honorary Membership from AIC President, Lawrence H. Flett.

Dr. Esselen received the A.B., A.M., and Ph.D. degrees from Harvard. He then became a member of the research staff of General Electric Company, Lynn, Massachusetts, until 1921, when he became vice president and director of research for Skinner, Sherman & Esselen, Inc. In 1930, he became president of the firm of Gustavus J. Esselen, Inc., consulting chemists and chemical engineers, in Boston, followed by the presidency of the Esselen Research Corporation which in 1949, became the Esselen Research Division of the United States Testing Company, Inc.

Dr. Esselen has been especially active in many scientific organizations.



—Fabian Bachrach

He is trustee of the Permanent Trust Funds of the Northeastern Section and a former director of The American Chemical Society. He is a former director of the American Institute of Chemical Engineers, and chairman of the American Section of the Society of Chemical Industry. He was a delegate of the National Academy of Sciences to the International Union of Chemistry in Liege (1930), and in Lucerne (1936). He is a Fellow and former member of the Council of The American Aca-

demy of Arts and Sciences.

During the late war, Dr. Esselen served as consultant to the Baruch Rubber Survey Committee; as member of the Chemical Referee Board of the Office of Production Research and Development (War Production Board), and as chairman of the Tropical Deterioration Administrative Committee (Army-Navy), Office of Scientific Research and Development.

He is the author of numerous technical articles and contributions to

scientific books, and he holds numerous patents, both here and abroad. He is associate editor of the *Textile Research Journal*.

After the award of Honorary Membership was presented to him, Dr. Esselen expressed his deep appreciation, and quoted a sentence from Richard Willstaetter: "It is our destiny, not to create, but to unveil." This motto, a favorite of Dr. Esselen's, appears on a tapestry which hangs on the wall of his office.

## Presentation of Honorary AIC Membership to Dr. Esselen

President Lawrence H. Flett, AIC

**HONORARY** Membership in THE AMERICAN INSTITUTE OF CHEMISTS is an award of the national organization. It has been the practice to have these awards presented in the chapters. There has been a very great difference in the way in which this honor is presented because there is a very great difference in the organization of the local chapters. Some of them are highly developed and highly organized; here, the New England Chapter is only in the process of organization.

Because of the differences in chapter organizations, there are times when these Honorary Memberships are presented with a great deal of publicity before crowded meetings and with worldwide recognition;

while there are other times when the presentation is made before a small, friendly group with modest arrangements.

It has been my privilege to be present at most of these meetings during the past six years, and to note that in every instance the Honorary Membership has been presented with a dignity and sincerity, commensurate with the honor which it signifies.

The INSTITUTE, unlike technical societies, is concerned with the profession. We deal with men rather than science. Those to whom we give Honorary Membership always do happen to have a wonderful background of scientific accomplishment. In fact, a fruitful contribution to

chemistry seems to go along with professional consciousness. There is no peculiar reason why this should not be so. The scientist who is conscious of his professional responsibilities does more telling work in his science.

Professional consciousness has never been personified in any individual to any greater extent than in the man we are honoring. Dr. Esselen has carried out a life-long campaign to improve professional understanding. By precept and example, he has contributed to the establishment of a greater understanding among chemists, and he has fostered a greater mutual respect of each for the achievements of others.

Dr. Esselen has stolen time from his own pressing business career to take an active part in chemical organization. For years he has been active in the American Chemical Society, and he has played an important part in its development. He is at present the head of the American Section of the Society of Chemical Industry, and he has done much to increase the stature of the organization. He has been for years an exemplary member of the INSTITUTE.

In short, throughout his career, Dr. Esselen has devoted himself whole-heartedly to the professional advancement of the chemist. The INSTITUTE has the means of recognizing this contribution, this help to all of us, and it does so by making Dr. Esselen an Honorary Member.

Dr. Gustavus John Esselen, F.A.I.C., the INSTITUTE takes pride in recognizing your very human contribution to professional understanding, to better fellowship and to mutual respect among chemists. By a unanimous vote of the National Council, you have been awarded Honorary Membership in THE AMERICAN INSTITUTE OF CHEMISTS.

### New England's Advantages

At the Boston Regional Meeting of the American Institute of Chemical Engineers, May 28-31, John J. Healy, Jr., F.A.I.C., assistant general manager of Monsanto's Merrimac Division and chairman of the Boston Regional Meeting, stated:

"Although New England does not have any single huge chemical engineering development, based on a natural raw material, it has within its borders a large number of chemical manufacturing operations representing every phase of chemical engineering development.

"New England offers chemical manufacturers three advantages: it is close to one of the most active research centers in the country; it is close to a major market for the consumption of chemicals; it has ready access to deep water and can, therefore, import raw materials cheaply."

### Please Note

In the recent Directory of A.I.C. members, the degree of "Dr." was inadvertently omitted following Dr. Otto Konig's name.

# Building Materials for the Future

Dr. C. F. Rassweiler, F.A.I.C.

*Vice President for Research and Development, Johns-Manville Corporation,  
22 E. 40th Street, New York 16, New York.*

(An abstract of a paper presented at the AIC Annual Meeting,  
May 11, 1950)

TECHNICAL progress in the building field is a matter of evolution rather than revolution. Progress is being made particularly along the line of reducing the cost of transforming cheap raw materials into finished shelter. New building materials are being developed to accomplish the purpose now requiring two different products; building materials are being developed in larger unit sizes so as to reduce the cost of erection; standardized factory-assembled sections are being provided to fit into conventional structures; and more durable materials are becoming available to reduce upkeep and maintenance costs. The least progress has been made in the field of assembly and erection of materials. More information is needed on the performance of finished structures. Some mechanism is urgently needed to facilitate cooperation between research men in different branches of the industry to provide a better balanced over-all research program. The Building Research Advisory Board, operating under the auspices of the National Research

Council, promises to supply this need if it receives adequate industry support.

(A complete copy of this paper may be obtained upon request to the author.)

## Dr. C. F. Rassweiler

Dr. C. F. Rassweiler, F.A.I.C., after graduating from the University of Denver, went to the University of Illinois to study under Dr. Roger Adams, F.A.I.C. Completing his work for the Ph.D. degree in 1924, he joined the staff of E. I. du Pont de Nemours & Company's Experimental Station at Wilmington, Delaware.

His work there was primarily with drying oils, resins, and finishing materials. In 1932, he became director of the du Pont Company's Philadelphia Laboratory, and under his leadership this organization pioneered the use of alkyd resins in paints, enamels, and varnishes. In 1941, he came to New York to take charge of research and development for the Johns-Manville Corporation. In 1942, he was elected a vice president and one of the four senior officers of the corporation. After directing extensive research work during the War, he has been concerned with the extensive development of the corporation's research organization, including the erection, near Manville, N. J., of a new Research Center.

# Trends in the Newer Metals

Alex Stewart

*Director of Research, National Lead Company, 111 Broadway, New York 6, N. Y.*

(An abstract of a paper presented at the AIC Annual Meeting, May 11, 1950.)

A REVIEW is given of the developments in the metal industry indicating a number of important accomplishments, the most important of which appears to be titanium metal and its alloys. The properties of titanium metal alloys make them competitive with some of our best alloy steels, and with a density of 4.5 midway between aluminum and steel, they become important in the aircraft industry, marine industry, and particularly where weight saving is important. The corrosion resistance of titanium metal and its alloys being equal or better than stainless steel will provide further possibilities.

In this paper the elements of zirconium, molybdenum, tantalum, columbium, indium, germanium, lithium, and beryllium are reviewed as well as the benefit of magnesium additions to cast iron. Free machining steels, new lead alloys, and galvanized coatings are also reviewed.

(A complete copy of this paper may be obtained in mimeographed form by ordering it from THE CHEMIST, 60 East 42nd Street, New York 17, N.Y. enclosing fifty cents to cover expense.)

Alex Stewart

Alex Stewart, director of research for National Lead Company, was born in Philadelphia. He was graduated from Pratt Institute in 1912, and then attended the Polytechnic Institute of Brooklyn, leaving in 1916 during preparations for World War I. In 1918, he became chief chemist for the Wringwalt Linoleum Company, followed by the position of chief chemist for C. L. Constant Company, mining engineers, where he remained until 1930. In that year he joined the National Lead Company as research engineer, and eight years later, he became director of research.

## Rand to Receive Chemical Industry Medal

The American Section of the Society of Chemical Industry announces that the Chemical Industry Medal for 1950 will be presented to William M. Rand, president of the Monsanto Chemical Company, St. Louis, Mo., at a dinner in the Waldorf-Astoria Hotel, New York, N.Y., on November 3, 1950. Dr. Gustavus J. Esselen, Hon. A.I.C., consulting chemist of Boston, and Chairman of the American Section, will preside.

# Alkalies and Heavy Chemicals

Dr. George F. Rugar, F.A.I.C.

Technical Service Division, Research & Development Department, Diamond Alkali Company, P.O. Box 430, Painesville, Ohio.

(An abstract of a paper presented at the AIC Annual Meeting,  
May 11, 1950)

ALKALIES and other heavy chemicals form the foundation on which the whole chemical industry rests. During the past three decades, advances in the heavy chemical industry have been due to intensive research. The future can be bright only if this emphasis on research is continued.

The course of this research in heavy chemicals must be along four main paths, namely, (1) Improvement in Manufacturing Processes; (2) Utilization of By-products; (3) Packaging and Transportation; and (4) Development of New Uses.

There are many ways in which manufacturing processes can be improved including those directly related to economics. Since the capital investment for heavy chemicals has a significant effect on their cost, one future objective of research could be the lowering of this demand for capital.

The utilization of by-products must be given more research attention if the heavy chemical industry is to drive forward. Obviously this is dictated by economic considerations.

Materials for packaging and methods of transportation demand research. In the face of continued improvement in the quality of heavy chemicals, packages must be developed which will deliver the products without contamination during shipment.

Finally, the research which will permit expansion in this industry must be directed toward the development of new uses. This is the important function of the new phase of research, designated as chemical market research. The future trend of research in alkalies and other heavy chemicals appears to be a combination of the several types discussed in this paper.

(A complete copy of this paper may be obtained in mimeographed form by ordering it from THE CHEMIST, 60 East 42nd Street, New York 17, N.Y., enclosing fifty cents to cover expense.)

## Dr. George F. Rugar

Dr. George F. Rugar, F.A.I.C., received the B.S. degree from the University of Rochester and the M.A. and Ph.D. degrees from Columbia University. He was professor of science and mathematics at Wagner College from 1921 to 1924 and instructor in chemistry at Columbia until

1926. For the next two years he was research chemist for Diamond State Fiber Company, which he left to go to Hooker Electrochemical Company, at Niagara Falls, as research chemist and sales promotion manager. In 1944, he became man-

ager of product development for Diamond Alkali Company, Painesville, Ohio, where he is now assistant manager of the Technical Service Division. He is chairman of the Ohio Chapter of THE AMERICAN INSTITUTE OF CHEMISTS.

## Looking Ahead in Pharmaceuticals

Dr. Randolph T. Major, F.A.I.C.

*Vice President, Merck & Company, Rahway, New Jersey*

(An abstract of a paper presented at the AIC Annual Meeting, May 11, 1950.)

AVERAGE life expectancy in the United States has increased seventeen years in the past half century—in part due to advances in the fields of pharmacy and medicine.

Pharmaceuticals prior to 1900 were largely non-specific and were used largely for reducing pain rather than for cure of disease. At the turn of the century, chemists, biologists, and medical men began an entirely new approach to the fight against disease and death—the development of and the designing of so-called specifics. Ehrlich's preparation of organic arsenicals leading to his discovery of arsphenamine, in search for a drug effective against syphilis, but harmless to the host, is an early example of this new approach in pharmaceutical research.

Such drugs as the antimalarials, the vitamins, the hormones, the antibiotics, and others have had the effect of lowering the death rate and increasing average life expectancy. With the aid of pharmaceuticals

tremendous strides have been made in combating diseases such as pneumonia, tuberculosis, syphilis, and the childhood diseases. But there still remains a vast field for research in drugs to be used in the fight against the heart diseases and cancer, the two leading causes of death in the United States at the present time. Drugs to prevent or aid in the cure of these two diseases are foremost in the minds of researchers in the pharmaceutical industry. They look to the future for the development of drugs really effective against the virus diseases.

Scientists are also endeavoring to increase the general health and the life expectancy of people living in the more backward countries of the world.

(A complete copy of this paper may be obtained in mimeographed form by ordering it from THE CHEMIST, 60 East 42nd Street, New York 17, N.Y., enclosing fifty cents to cover expense.)

## FOOD AND NUTRITION

### Dr. Randolph T. Major

Dr. Randolph T. Major, F.A.I.C., is scientific director and vice president of Merck & Company, Inc., manufacturing chemists, Rahway, New Jersey. He obtained the A.B. and M.S. degrees at the University of Nebraska and completed the Ph.D. at Princeton University in 1927. An honorary degree of D.Sc. was

conferred on him by the University of Nebraska in June 1949. After carrying on research in Paris and Berlin for a year, and later serving as instructor and research associate at Princeton, he joined Merck & Company, Inc., in 1930, as director of pure research. In 1936 he was made director of research and development, a title which he held until his promotion in July of 1947 to that of scientific director and vice president.

## Food and Nutrition

John H. Nair, F.A.I.C.

*Assistant Director of Research, Continental Foods, Inc.,  
1500 Hudson Street, Hoboken, New Jersey*

(An abstract of a talk presented at the AIC Annual Meeting,  
May 11, 1950.)

AT THE turn of the century, interest in nutrition centered on the caloric value of foods and the relative contribution of protein, carbohydrate, fat and minerals to body functions. Attention has shifted successively to other essential substances such as particular amino acids, trace elements and vitamins. During World War II extensive studies were made regarding the usefulness of high protein food from a therapeutic viewpoint. Emphasis had now shifted to the amino acid content of protein and the effect of processing and storage on its quality. One of the most recent foci of research attention has been the animal protein factor which promises to make possible the equating of proper combinations of vegetable protein to animal protein as respects its nutritive value.

Experiences in many areas during

the war led to a modification of the previously held concepts of caloric values. Due to the interrelationship among nutrients and the modification of bodily functions which appear possible, present opinion holds that there are no fixed minimal body requirements for particular nutrients. Better understanding of the interconvertability of nutritional elements is anticipated through increasing availability of tracer isotopes for biochemical research.

In food technology great strides have been made in improvement of the quality and form in which foods reach the consumer. Better processing in improved equipment embodying advancements in engineering practice now offers the housewife a wider variety of fresher, tastier, more appetizing products in convenient attractive packaging. Better

utilization of food surpluses and by-products has provided raw materials for chemical industry. Future developments will result in new sources of foods such as proteins from yeasts, fats from molds or natural gas, synthetic flavoring materials from chemicals. Imagination is required to conceive or compose these outside of present experience, while education of a whole new generation to a liking for such new food forms will probably be necessary.

**John H. Nair**

John H. Nair, F.A.I.C., has been connected with the food industry throughout his professional life. He spent many years

in research, development, quality control and technical sales in the dairy industry. For the past eight years he has been assistant director of research at Thomas J. Lipton, Inc., Hoboken, New Jersey. He has published extensively in the fields of food chemistry, dehydration and food technology. He is extremely active in technical societies, having been past-chairman of the Division of Agricultural and Food Chemistry of the American Chemical Society, past chairman of the Syracuse Section, and present chair-elect of the New York Section of the American Chemical Society, as well as founder-member of the Institute of Food Technologists. He is chairman of the Organizing Committee for the Diamond Jubilee Celebration of the American Chemical Society, September, 1951.

## The New Look in Cosmetics

**Dr. Ralph L. Evans, F.A.I.C.**

*President, Evans Research & Development Corporation, 250 East 43rd Street, New York 17, N. Y.*

(An abstract of a talk presented at the AIC Annual Meeting, May 11, 1950.)

**A** SHORT summary of the present positions of cosmetic art and cosmetic science is developed to show the shifting scene of principal interest from body to face to teeth to nails and to hair. The skin, as the largest organ of the body, and its appendages offer many foci for attention both artistic and scientific. The choice of cosmetic art and practice is broader than ever in history and constantly borrows more from more basic sciences. The outlook is excellent. Diversified, often conflicting in-

fluences, shift emphasis from time to time, but the general trend is toward better functional products and high style. Hygiene and control of growth and physiology overlap the science and practice of medicine, whereas art and high style lean heavily upon industrial chemistry. Surface color is available in wide variety, but deeper color control—for example within hair—is still unsatisfactory. New odors are continually becoming more available, stable and adaptable, but "odorology" is as yet purely subjec-

## THE NEW LOOK IN COSMETICS

tive and does not lend itself to measurement or instrumental study.

Though cosmetics are momentarily much in favor and their use by both women and men seems destined to broaden rapidly, it is not impossible that their use will again fall into disfavor or perhaps even be banned due to political, sociological, or religious influences.

(A complete copy of this paper may be obtained by ordering it from THE CHEMIST, 60 East 42nd Street, New York, 17, N.Y., enclosing fifty cents to cover expense.)

### Dr. Ralph L. Evans

Dr. Ralph L. Evans, F.A.I.C., president, Evans Research and Development Corporation; proprietor of Ralph L. Evans Associates; president of Evans Chemetics, Inc., and president of Sales Affiliates, received the S.B. degree from the University of Chicago and the Ph.D. degree from Columbia University. Specializing in the organic chemistry of hair and cosmetics, as consultant, he also has been chemist and executive of Inecto, Inc., the Marinello Company, and director of Evans Chemicals, Ltd.

## Rubber Research—Past Present and the Aim

Norman C. Hill

*The C. P. Hall Company, 2510 First National Tower, Akron 8, Ohio*

(A statement of the subjects covered in a paper presented before the AIC Annual Meeting, May 11, 1950.)

A GENERAL survey of rubber from its beginnings down to World War II was undertaken, giving in simple terms the mileposts in rubber research. A survey of the contribution of the rubber industry to the war effort was presented. The rubber chemists did a good job during World War II, further indicating that the chemist is America's greatest resource.

The rubber consumption per capita was discussed and future rubber production was suggested. The effect of increased demand on both natural and synthetic rubber was

shown. The general economic factors affecting the quantity of research were presented. Rubber research was specifically discussed and the aim in rubber research was stated.

Norman C. Hill

In his thirty-eight years of industrial experience, Norman C. Hill has spent almost half of his time in research and development, and the other half in production work. Before joining The C. P. Hall Company, manufacturers and distributors of chemicals for the rubber industry, he had been works manager, Monsanto Chemical Company, Plastics Division, Springfield, Massachusetts; director of research and development, Pittsburgh Coke and Chemical Company, Pittsburgh, Pennsylvania, and chief chemist of the Government Synthetic Rubber Evaluation Laboratories, Akron, Ohio.

## Chemicals Used in the Manufacture of Rubber Goods

Dr. Albert A. Somerville

*Vice President, R. T. Vanderbilt Company, Inc., 230 Park Avenue, New York, N. Y.*

(A statement of the subjects covered in a paper presented at the AIC Annual Meeting, May 11, 1950.)

THIS paper discussed in a general way the building of a rubber compound. The function of each class of materials was discussed. The materials discussed were sulfur, zinc oxide, fatty acids, accelerators, plasticizers, softeners, antioxidants, fillers, and some special purpose chemicals.

(A mimeographed copy of the complete paper may be obtained from **THE CHEMIST**, 60 East 42nd Street, New York 17, N.Y., by sending fifty cents to cover expense.)

Dr. Albert A. Somerville

Dr. Albert A. Somerville has been with R. T. Vanderbilt Company for the past thirty years. He is vice president in charge of research and sales pertaining particularly to chemicals used in the manufacture of rubber goods, and he has managed the development of additional lines such as emulsifiers in food products, inhibitors of corrosion, fungicides or bactericides for use in the lumber industry, textiles, cutting oil and seed germination. He received the D.Sc. degree from Cornell in 1910, and then went to the U.S. Rubber Company Research Laboratories where he remained until the end of World War I.

## Looking Ahead in Paper Industry

John B. Calkin, F.A.I.C.

*Chemical Consultant, 500 Fifth Avenue, New York 18, N. Y.; Director, Department of Industrial Cooperation, Associate Professor of Chemical Engineering, University of Maine, Orono, Maine.*

(An abstract of a paper presented at the AIC Annual Meeting, May 11, 1950.)

THE pulp and paper industry is the fifth largest industry in the U.S. In 1900, the United States used about 58 pounds of paper and paperboard per capita, and in 1948 this had risen to 357 pounds per capita.

Paper pulp is a form of cellulose, which is one of the few industrial raw materials that need not be depleted. Proper planning can increase rather than decrease this industrial resource. The only ceiling to the expansion of the pulp and paper in-

### ... PAPER CHEMISTRY

dustry is an adequate supply of pulp-wood.

In various parts of the U.S., soft-wood resources have been depleted. There is a tendency to relieve this pressure by the use of hardwoods. In the 36-year period, 1909-1945, our national "woodpile" has been reduced by 44 per cent. Some pulp producers have consolidated their position by early reforestation and cutting pulpwood on a sustained yield basis.

#### Lignin as an Industrial Raw Material

Can any use be found for the lignin itself or can it be transformed chemically into other products of value?

There is evidence that lignins may be used for fertilizer; for filling for Buna rubber; in the preparation of Bakelite-type resins; as a substitute for the phenols in making laminated products; as a dispersing agent in concrete; for the making of vanillin (flavoring), and for use in asphalt to make a "perfect bond even with wet stone." Work is in progress looking toward the use of vanillin as a chemical raw material.

As our knowledge increases, the 2,500,000 tons of lignin available annually from the pulp and paper industry will prove to be a veritable gold mine for chemical raw materials.

"Since lignin is the only organic material reproduced every year by

millions of tons for which no substantial use has been found, it is obvious that the time has come for a concentrated effort to solve its structure. The solution will not be as simple as was that of coal tar, but the progress made during the past twenty-five years and economic necessity, together will spur industry to produce a new family of chemicals."

#### Paper and Paper Products

A real challenge exists in obtaining maximum strength for paper.

There are possibilities for the extensive use of paper in the manufacture of shoes, clothes, and other items. Will people use paper sheets?

There are new developments in water repellency for paper which involve a fresh approach.

Think of the everyday uses of paper. Then add laminated paper for panel and structural units; creped paper for insulation, honeycombed paper for strengthening plywood panels; the use of specially treated paper for particular purposes of wrapping food and perishables. Then swing to chemical by-products: plastics, paints, insecticides, hormones, yeast, and other products.

More chemists and chemical engineers are needed in the pulp and paper industry to work out the technical problems. Thus, there will be more values for civilization, and mankind will have a richer, fuller life.

**John B. Calkin**

John B. Calkin, F.A.I.C. received the S.B. and A.M. degrees from Haverford College; the M.S. in Ch.E. from the University of Maine, and he has also done special work at Massachusetts Institute of Technology and Cornell. After several years of experience with the Brown Company, the Dennison Manufacturing Company, and the Union Bag and Paper Corporation, he became chemical consultant in 1948, with offices at 500 Fifth

Avenue, New York, N.Y. where he specializes in pulp and paper chemistry and technology; fire prevention tests; commercial chemistry development and chemical marketing research; wood and naval stores chemicals; x-ray analysis and microscopy of industrial materials, industrial research advice, and food technology. He is also director of the Department of Industrial Cooperation, and associate professor of chemical engineering at the University of Maine.

## Paint Research at Mid-Century

**Harry Burrell, F.A.I.C.**

*Finishes Division, Interchemical Corporation, Newark, New Jersey*  
(An abstract of a paper presented at the AIC Annual Meeting,  
May 11, 1950.)

THE paint business is intimately tied up with manufacturing in general because paint is not an end product but finds its utility in protecting and decorating all of the multifarious objects which make up our complex civilization. Regardless of what mechanical and electrical gadgets the next fifty years bring, coatings will be produced to make them more useful and beautiful. The door has just been opened to fundamental high polymer chemistry, and much progress is expected in the next two decades. The atomic energy project will greatly influence coating trends whether used for peacetime or military purposes. If a national, synthetic gasoline program develops, by-product solvents may be expected to change the character of our paints and to make them cheaper. There seems to be a trend toward tailor-

making coating molecules from the fifty or so vinyl monomers now available. As airplanes travel at higher and higher speeds, coatings become more important in producing smooth, drag-resistant skins.

(A mimeographed copy of the complete paper may be obtained from THE CHEMIST, 60 East 42nd Street, New York 17, N.Y., by sending fifty cents to cover expense.)

### Harry Burrell

Harry Burrell, F.A.I.C., was graduated from Newark College of Engineering with the Ch.E. degree. He has been active in the high polymer field since 1934, originally with Carleton Ellis, and later as research supervisor for Heyden Chemical Corporation. At present, he is connected with the Finishes Division of Interchemical Corporation. He holds approximately fifteen U.S. patents, and he is author of numerous papers in the coatings and related fields.

# The Next Fifty Years in Plastics

Dr. Paul O. Powers

*Technical Advisor, Battelle Memorial Institute, Columbus, Ohio*

(An abstract of a paper presented at the AIC Annual Meeting,

May 11, 1950.)

**P**ROJECTION of the present trends and expansion in plastics indicates a one-thousand-fold growth in the next fifty years. Since the increase in the last decade has probably been retarded by war-time conditions, the natural rate at the present time may be even greater. While the attainment of a production capacity of 500,000,000 tons of plastic materials in the year 2000 does seem excessive, there is little doubt that there will be a continued increase in the scale of manufacture of plastic materials. It seems apparent that most of the increase in the next decade will have to be produced from petroleum materials. But it is also possible that this trend may have to be reversed, if production approaches the levels suggested above, since the present production of petroleum could not supply the raw materials for such large production of plastic materials. Therefore, use of cellulose, rubber, and other natural products may have to be increased again because of their relative availability.

It seems doubtful if the per capita consumption of plastic materials, in the sense of molded and extruded

articles, can be expanded hundreds of times in the coming decades. However, it is apparent that plastic materials will find uses in related fields as fibers, as elastic materials, as films, and in many new forms. The increasing use of plastic materials in engineering uses and as building materials can be foreseen. While the physical volume will, undoubtedly, increase, the types of plastic materials are now pretty well established, and an examination of the chemical structures of presently useful plastic materials shows that most of the useful materials are already well known. There remains, however, a large unexploited area in the field of copolymers and modifications of existing plastics. Also, plastics designed for certain specific applications will continue to appear.

Research in plastic materials has already established a firm foundation for further growth, and this field is active at the present time. When the knowledge that was possessed of the structure of plastic materials twenty-five years ago is examined, the tremendous strides that have been made become apparent. Fundamental information is now available on the

methods of formation of plastic materials, their structures and methods of controlling the structure. Causes of deterioration and methods of reducing deterioration are understood. Also, much study has been given to the efficient use of plasticizers. An encouraging start has been made on the correlation of the physical properties of plastic materials with their chemical structure.

However, there is much still to be learned about the composition and methods of producing useful plastic materials. It is from the background already established that further study will be made. Continued research in these fields may be expected to result in improved materials of more widespread utility.

(A mimeographed copy of the complete paper may be obtained from *THE CHEMIST*, by sending 50 cents to cover expense).

### Dr. Paul O. Powers

Dr. Paul O. Powers, technical advisor at Battelle Institute, is widely known for his work on plastics, organic coatings, and resins. He is author of "Synthetic Resins and Rubbers;" chapters in several standard reference works, and standard reference charts on the preparation of synthetic resins and rubbers. He holds numerous patents in synthetic chemistry. He is a graduate of Boston University, and has the M.S. and Ph.D. degrees from the University of Pittsburgh. His industrial experience includes positions with Atlantic Dyestuff Company, Burrage, Massachusetts; the Calco Chemical Company; the former New England Color Works, and Newport Industries, Inc., of Pensacola, Florida. He taught chemistry for three years at the University of Pittsburgh and was research fellow at Mellon Institute for two years. During World War I, he served in the Development Division of the Chemical Warfare Service, and during World War II, he taught War Training courses at Pennsylvania State College and Franklin and Marshall College. Before joining the Battelle staff, he was, for ten years, chief of organic research for the Armstrong Cork Company.

## The Use of Radioactive Materials in Research

Dr. Bruce S. Old

*Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Massachusetts*

(An abstract of a talk presented at the AIC Annual Meeting, May 11, 1950)

**R**AADIOACTIVE materials were first used in research by G. Hevesy and F. Paneth in 1913. Their use has expanded very rapidly in the past few years with the advent of the isotopes distribution program of the Atomic Energy Commission. The types of uses of radioisotopes in re-

search are divided into five major categories: specificity, sensitivity, radiography, treatment and diagnosis of diseases and gadgetry. Examples of each use are discussed. The importance of proper training in the field and the consideration of the utilization of radioactive tracers in

### ... RADIOACTIVE MATERIALS ...

the design of experiments are emphasized. It is predicted that the most important single use of radioactive materials in the future will be in the solution of fundamental research problems.

#### Dr. Bruce S. Old

Dr. Bruce S. Old received the B.S. degree from the University of North Carolina and the Sc.D. degree from Massachusetts Institute of Technology. From 1938 to 1941, he was research engineer, Development Department, of Bethlehem Steel Company. From 1941 to 1946

he served in the Office of Coordinator of Research and Development and later in the Office of Research and Inventions in the Office of Secretary of the Navy, Navy Department. In 1946 he left the Navy as a Commander and joined Arthur D. Little, Inc., where he is in charge of process metallurgy. He has directed the research furnace at high top pressure. In 1949, he was elected a director of Arthur D. Little, Inc. He resigned recently as part-time consultant to the Atomic Energy Commission, where he was chief of the Metallurgy and Materials Branch, Division of Research.

## Flavor

**L. B. Sjostrom and Dr. S. E. Cairncross,**

*Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.*

(An abstract of a paper presented at the AIC Annual Meeting, May 11, 1950.)

HUMAN tasters will continue to be the best measuring instrument for research workers seeking to improve flavor, but more objective techniques are needed. In many instances it will become possible to use physical and chemical methods to trace the improvement or deterioration of particular aspects of a flavor, as has already been done in measuring the odor deterioration of orange oil, but these methods must be correlated with the actual subjective impression, which can be registered only by human subjects.

Recent trends in processed foods have been toward more bland and mild flavors and toward less varia-

tion in flavor even between different brands. In most instances, the closer the flavor of a preserved food can approach that of the fresh food the better, and freezing has permitted great steps in this direction. For the future, preservation by radiant energy and by new methods of heating offer promise, as does flavor improvement by use of better and more carefully chosen seasonings. The fresh foods themselves must, however, be of flavorful quality; many varieties favored today appear to be chosen more for durability and appearance than for flavor.

(A copy of the complete paper may be obtained from the authors.)

**Loren B. Sjostrom**

Loren B. Sjostrom, senior research chemist at Arthur D. Little, Inc., Cambridge, Massachusetts, received the B.S. degree in chemical engineering from Northeastern University. During most of the fourteen years of his connection with Arthur D. Little, Inc., he has worked directly with flavor, foods, and to a lesser extent, pharmaceuticals. He is now in charge of all laboratory work on food flavor and food technology. He has been author or joint author of several papers, entitled "Measurement of Food Acceptance," "Observational study of Monosodium Glutamate," "What Glutamate Does in Food," "The Role of Monosodium Glutamate in the Seasoning of Certain Vegetables," and "Flavor Profiles."

**Dr. S. E. Cairncross**

Dr. S. E. Cairncross was graduated from the University of Southern California, and then obtained the doctorate from Columbia University. From 1933 to 1939, he was a member of the research staff of Bristol-Myers Company, and since 1939 has been with Arthur D. Little, Inc., where he has directed research projects in organic and pharmaceutical chemistry and in the flavor of food and drugs. His publications include, "What Glutamate Does in Food" (co-author); "The Effect of Glutamate on Food Flavors," Symposium on Monosodium Glutamate, 1948; "Flavor Profile" (co-author), Institute of Food Technologists, 1949.

## Electrochemistry—Today and Tomorrow

**Dr. R. M. Burns**

*Chemical Director, Bell Telephone Laboratories, Inc.,*

*Murray Hill, New Jersey*

An abstract of a paper presented at the AIC Annual Meeting, May 12, 1950

**B**ROADLY speaking, the field of electrochemistry includes the electroprocess industries, batteries and electronics. The first of these, the electroprocess industries consuming about a fifth of the electric energy generated in the United States and Canada, provide those numerous products of the electric furnace such as calcium carbide, silicon carbide, graphite, ferromanganese, phosphorus, and alloy steels. Included also are the products of the electrolytic cell — aluminum, magnesium, caustic soda, chlorine, electrolytic copper,

zinc, nickel and many others. Production by these industries will increase several fold in the next few years. Recent improvements in both primary and secondary batteries are in the direction of providing longer life at lower maintenance cost. Great advances made in electronics during the war are being continued in the development of new types of electron tubes. New phosphors are being employed in the television field, still in its infancy. A new development in the electrochemistry of the solid state (the Transistor) in which tiny pieces

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of the element germanium can be used to amplify the electric current gives promise of developing a new industry comparable in size to the electron tube industry of the present day.

### Dr. R. M. Burns

Dr. R. M. Burns, chemical director of Bell Telephone Laboratories, is a native of Colorado and a graduate of the State University which later conferred the honorary D.Sc. degree. His graduate

work, leading to the Ph.D. degree, was done at Princeton University. He has been with Bell Telephone Laboratories since its organization in 1925, having joined its predecessor, Engineering Department, Western Electric Company, in 1922. He has been president, also secretary and treasurer, of the Electrochemical Society and is at present chairman of the New York Section of the American Chemical Society. He has carried on work in the field of corrosion and is senior author of the American Chemical Society Monograph, "Protective Coatings for Metals."

## Milestones of the Mid-Century in Fertilizer Chemistry

Dr. C. E. Waring

*Vice President, The Davison Chemical Corporation, Baltimore 3, Maryland  
An abstract of a paper presented at the AIC Annual Meeting, May 12, 1950*

THERE are twelve chemical elements now recognized as essential to the growth of higher plants. A deficiency of any one of these elements will result in crop damage or failure. The major elements, those required in large quantities, are nitrogen, phosphorus, potassium, calcium, magnesium, and sulfur. Most soils are self-sufficient in calcium, magnesium and sulfur, but large quantities of sulfur are used in agriculture for insecticides and for manufacture of sulfuric acid, of which about 35% of the total production is consumed by the fertilizer industry. Nitrogen phosphorus and potassium must be added to the soil in the form of fertilizer. Agricultural requirements for

these elements have in a large measure motivated the growth of the sulfur, potash and ammonia industries over the past fifty years. The United States is now self-sufficient in the production of all three of these materials, although this self-sufficiency did not become apparent for sulfur until 1917 and for potash until 1941. Development of the Frasch process in 1903 for reclamation of sulfur from the salt dome cap rocks of Louisiana and Texas, the development of potash deposits at Trona, California, in 1916 and Carlsbad, New Mexico, in 1931, and the successful adaptation of the Haber Bosch process for synthetic ammonia in 1921 are directly responsible for

the favorable production balance of these three commodities.

The minor group of essential elements required for crop growth consists of iron, magnesium, boron, copper, zinc, molybdenum and cobalt. The requirements are relatively small, sometimes trace amounts, although in some specific localities, as in Florida, for example, about 10,000 tons of manganese sulfate were applied to the soils in one year.

The recently developed methods for studying plant behavior through the use of radio-isotopes has furthered the understanding of plant metabolism with respect to phosphorus, calcium, cobalt, copper, potassium, sulfur and zinc. The role of commercial fertilizer has been more clearly defined as a result of these studies.

Development of the tracer technique for study of plant metabolism with respect to the major and minor elements and the behavior of those

elements present in the soil and those added as fertilizers, along with improved commercial processes for manufacture of the essential materials has broadened the scope of fertilizer applications and supplied the necessary tools for even greater developments in the future.

(A complete copy of this paper may be obtained on request, from the author)

#### Dr. C. E. Waring

Dr. Charles E. Waring was graduated from Ohio Wesleyan University with the A.B. degree. At Ohio State University he was a graduate assistant, assistant instructor, and DuPont Fellow. He received the M.Sc. degree in 1926 and the Ph.D. in 1927. At the Eastman Kodak Company, Dr. Waring spent three years in research on cellulose esters, plastics, and other chemicals. For fifteen years he was with the Frigidaire Division of the General Motors Corporation and was a member of the group which developed Freon refrigerants. He also worked on lubricating oils, plastics, and other problems. He became supervisor of the chemical and metallurgical laboratory at Frigidaire in 1940. He holds about twenty-five patents.

## Petrochemicals—1950 and 2000 A. D.

Dr. Gustav Egloff, Hon. A.I.C.

*Universal Oil Products Company, 310 South Michigan Ave., Chicago 4, Ill.*

(An abstract of a talk presented at the AIC Annual Meeting, May 12, 1950)

THE petrochemical industry, which was initiated only twenty-five years ago, now produces about 12,000,000,000 pounds of chemicals annually. Indications are that it may reach 48,000,000,000 pounds by the year 2000 and at the same time will

be utilizing only one per cent of the projected petroleum and natural gas production. These predictions are based on present demands for petrochemicals and the development of new products. Continued expansion is assured by the reliance of petro-

## PETROCHEMICALS . . .

leum companies on research. Over \$110,000,000 is spent annually on petroleum research.

Most of the alcohols and many other high tonnage chemicals are now produced from petroleum and natural gas. Many new products have been developed such as synthetic glycerin which is important not only in meeting present demands but also as a potential source of synthetic fats to augment food supplies.

Scientifically practiced agriculture offers an unlimited market for fertilizers, insecticides, soil fumigants and weed-killers. The products already developed have increased crop yields and even restored depleted farm lands to production.

The plastics industry has grown 600 per cent in the past ten years and could increase 25-fold in the next fifty. Demand is in excess of supply for many products and new ones are continually being developed.

The synthetic rubber industry which is largely based on petroleum will increase despite availability of natural rubber. Synthetics are being improved and entirely new products better suited to many uses than the natural rubber will be developed.

Nylon is increasingly dependent on petroleum and natural gas for raw materials. New textiles such as Orlon from acrylonitrile necessitate increasing petrochemical production.

The petroleum industry is a ma-

jor supplier of raw materials to the detergent industry which has reached 1,000,000,000 pounds annual production and is expanding.

One of the largest future markets for petrochemicals is aromatics such as benzene. The maximum quantities available from coke-oven operation are now being produced but demands are not being met. All increases in supply will necessarily come from the petroleum industry.

The present investments in petrochemical plants exceed \$1,000,000,000 and a \$500,000,000 expansion is taking place. This enormous expenditure attests the faith of oil and chemical industries in the future of petrochemicals.

(A complete copy of this paper may be obtained from the author.)

### **Dr. Gustav Egloff**

This Honorary Member of the A.I.C., recipient of its 1940 Gold Medal, and its twice-elected president, is world-renowned for his activities in the petroleum industry. He started his career by obtaining the A.B. degree from Cornell and the M.A. and Ph.D. degrees from Columbia followed by a year of practical training in the U.S. Bureau of Mines, and a year of industrial training in Aetna Chemical Company. He joined Universal Oil Products Company in 1917, where as director of research he has achieved a remarkable record which includes some three-hundred patents and six-hundred publications. His professional activities are extensive, as the innumerable honors which have been conferred upon him testify.

## Developments in Liquid Fuels

W. M. Holaday

*Director of Research Laboratories, Socony Vacuum Oil Company,  
26 Broadway, New York 4, N. Y.*

(An abstract of a talk presented at the AIC Annual Meeting, May 12, 1950)

THE subject paper describes the developments which have taken place in the production and utilization of liquid fuels during the period 1900 to 1950 and charts the trends which may be expected to take place during the next twenty-five years. Concentrating on the key product—motor gasoline—the allied development of the automotive and petroleum industries is discussed and evaluated in the light of automotive design changes which may be expected and the resultant effect on the petroleum industry and petroleum research in particular. Other liquid fuels are discussed including aviation, diesel, residual and heating oils followed by an analysis of synthetic fuels in our future economy along with the potential sources of such fuels and the direction that research in this field should take. Concluding

the paper, the benefits and problems of industrial research are presented as a basis for predicting the requirements for future research and the inherent responsibilities of industry.

W. M. Holaday

Upon graduation from Ohio State University in 1925, with the degree of B.S. in mechanical engineering, he joined the laboratory staff of the Standard Oil Company (Indiana) as automotive engineer. In 1937, he became associated with the Socony-Vacuum Oil Company, Inc., as assistant manager of the research laboratories. From January 1943 to August, 1944, he was granted a leave of absence from Socony-Vacuum to serve with Petroleum Administration for War, first as chief of the Aviation Section, and later as assistant director of refining with supervision over Aviation and Technologist sections. On his return in September, 1944, he was appointed director of Socony-Vacuum Laboratories, consisting of three laboratory departments: Research and Development at Paulsboro, New Jersey; Technical Service at Brooklyn, New York, and Field Research Laboratories at Dallas, Texas.

## Today & Tomorrow in Solid Fuels Utilization

J. D. Clendenin

*Coal Utilization Engineer, U.S. Bureau of Mines, Anthracite Research Laboratory, Schuylkill Haven, Pa.*

(An abstract of a paper presented at the AIC Annual Meeting,  
May 12, 1950.)

THIS report touches briefly on research in solid fuels in the fields of coal chemistry, properties and be-

havior, the beneficiation and processing of coal, its gasification, combustion, carbonization and use in

other processes. Problems in the evaluation of use properties of solid fuels are considered. The effect and significance of developments in various fields, including those where coal is a fuel or raw material, are examined along with methods of processing or utilizing that depart from present practice. Those fields include: iron ore beneficiation and smelting; railroads; generation of electricity; cement, lime, clay and refractories industries; carbonization and coke manufacture; electric - furnace products.

It is suggested that investigations bearing on utilization should assume greater importance because the general efficiency of solid fuels utilization has not kept pace with rising costs and total energy requirements; there is increasing interest in the use of cheap low grade fuels. Since utilization research is only one aspect of the solid fuels utilization picture, research effort will be directed more

than ever before toward considerations of economy and efficiency, service and human relations in production and distribution, as there is general agreement that a suitable supply of coal of good quality at competitive prices is imperative if the present markets for coal are to be maintained and expanded.

#### J. D. Clendenin

J. D. Clendenin was appointed fuels utilization engineer and supervisor, Utilization and Preparation Section at the new Anthracite Research Laboratory, U.S. Bureau of Mines, Schuylkill Haven, Pennsylvania, on March 1, 1950. Prior to this, he was a member of the staff of the Division of Fuel Technology, The Pennsylvania State College, where, since 1940, he was graduate assistant, then research assistant, and since 1945, assistant professor. After graduation in 1939 from The Pennsylvania State College, he spent one year as plant chemist at the Pleasant Gap, Pennsylvania, plant of Whiterock Quarries, Inc., before returning to Penn State to complete the requirements for the M.S. degree in fuel technology in 1942. He has conducted investigations and published papers in the fields of coal properties and behavior, combustion and activation, production of agglomerate fuels and in fine-coal preparation and dewatering.

## Photography—Image of The Future

**Dr. Cary R. Wagner, F.A.I.C.**

*Vice President, General Aniline and Film Corporation, 230 Park Avenue,  
New York, N. Y.*

(An abstract of a talk presented at the AIC Annual Meeting, May 12, 1950)

A brief review was given on early discoveries, and developments during the past half-century were described, which have led to the present day

photographic products. The wide application of light sensitive photographic materials in various fields of science, art, and industry was shown.

A description was given of some of the advances in photography that have been made possible by research, e.g.: use of sensitizing dyes to increase speed of emulsions and to make emulsions sensitive to specific wavelengths of light; and the development of the additive and subtractive methods used in color photography. Mention is made of some of the problems facing the manufacturer of photographic materials, such as: Fool-proof shutters for cameras, faster emulsions, longer-lived emulsions, better and more stable color-formers for color film, higher speed color film, better film base, and more uniform gelatin or a gelatin substitute.

#### Dr. Cary R. Wagner

Dr. Cary R. Wagner, after receiving the B.S. degree from the College of Wooster, Ohio, in 1915, spent one year as graduate assistant at Purdue University. He was granted the honorary D.Sc. by the College of Wooster in 1945. In 1916, he joined the staff of the Bureau of Soils in Washington, returning to Wooster to teach in 1918. He then went to Standard Oil Company (Indiana). In 1921, he became manager of the Lion Oil Refining Company plant at El Dorado, Arkansas. In 1924, he joined the Pure Oil Company as assistant chief chemist, became chief chemist in 1930, and chairman of the Refinery Control Board in 1939. During the war, he resigned from the Pure Oil Company to organize the Process Development Section of the Refining Division, P.A.W. Currently, he is vice president in charge of operations for the General Aniline and Film Corporation.

Dr. Mary L. Willard, F.A.I.C., professor of chemistry at Pennsylvania State College, spoke on "Microscopy of Furs" at the April meeting of the Northeastern Ohio Section of the American Chemical Society.



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### SPECIAL MEETING

A special meeting of the National Council will be held July 19, 1950, at The Chemists' Club, New York, N. Y. at 6:00 P.M.

# Local Chapter News

C. P. Neidig, F.A.I.C.

## Annual Reports 1949 - 1950

### Baltimore Chapter

The Baltimore Chapter got off to a flying start last fall. Plans for the year were shaped at a conference of the newly elected officers and advisory council. After a review of the purposes of the local chapter it was judged that they fell in two categories: (1) to interest and benefit the local members through a program which affords an opportunity for wider and closer personal contacts, exchange of thoughts and individual recognition; and (2) to foster the growth of A.I.C. through obtaining and developing promising new members, keeping in mind that growth is a result of vitality—not its cause. After this philosophical approach it was decided that the first effort of our local chapter should be designed to interest and benefit local members.

Our program was placed under the direction of our Vice-Chairman, Reverend Father E. S. Hauber of Loyola College, to whom we are greatly indebted for its success. The first event was a dinner meeting followed by a round table discussion of motivation in research lead by Dr. Albin H. Warth, chemical director of the Crown Cork and Seal Company. Then there was a talk by Dr. Harry L. Fisher on the "Human Side of Research." At an open meeting held at Loyola College, November 16th, a scroll was presented to Dr. Fisher conferring on him Honorary Membership in A.I.C., to which he responded by an excellently illustrated talk on synthetic rubber.

The next important event was a most unusual and interesting talk by Dr. Henry Freimuth, toxicologist for the City of Baltimore. His subject was "Chemistry in Crime Detection." It is said that no crime can be committed without leaving a trace. Dr. Freimuth showed us how medical examiners, toxicologists and chemists find where killers slip up—the presence of poison, the distance from which a shot is fired, the detection of sabotage attempts—to mention a few of

his personal experiences. There were so many questions from the floor that it was hard to close the meeting.

Events in the offing are another panel discussion and a plant trip. Financially our activities have been largely self-supporting. There is a balance of about \$125 on our Treasurer's books. From the membership angle, we now have 52 active members in the Baltimore Chapter, or a gain of three new members. This does not include those gained by transfer which happens to balance those lost. In addition some local associate members have been added to our roll.

It is with deep sorrow we report the death of our honored member and beloved friend and councilor, Dr. A. G. DuMez, F.A.I.C., dean of the School of Pharmacy of the University of Maryland.

—Marc Darrin, *Chairman*

### Chicago Chapter

The year now ending has seen a steady expansion of the Chicago Chapter in both membership and activities.

The Membership Committee, under E. L. Gordy, initiated an extensive letter-writing campaign which resulted in an increase of membership of approximately 10 per cent and raised the membership to above 200. The recent inclusion within the Chicago Chapter, by action of the National Council, of all AIC members within a 11-state area has brought our membership to 315.

A major project of the Chicago Chapter has been the issuance of a questionnaire to some 500 employers of chemists regarding "Employment Practices." The Economic Status Committee, headed by Herbert Schwarz, is currently correlating and evaluating the replies, and the April 28th meeting of the Chapter will be devoted to analysis of the data by William Kubie, a member of the Committee. This same group is also engaged in a study of the effect of recent changes in the Wages and Hours Regulations on chemists.

Our meeting programs, which this year have been arranged by Dr. William L.

## LOCAL CHAPTER NEWS

Harber, have continued along the provocative lines for which the Chicago Chapter has become known. In addition to the meeting on "Employment Practices" mentioned above, a forum was held in November on "The Outlook for Chemical Employment in 1950" which was addressed by Prof. W. C. Johnson of the University of Chicago; J. S. Wilson of Corn Products Refining Company; Mrs. L. Canterbury, representing the Tom Coffer Employment Agency; and A. O. Berger of the U.S. Bureau of Labor Statistics. In February, a forum on "Hiring Practices in the Chemical Industry" included talks on "Application Blanks" by Dr. A. B. Cramer of F & F Laboratories; "Men Over 45" by H. F. Schwarz of Sherwin-Williams; "Employment Contracts, by John Dienner of Brown, Jackson, Boettcher, and Dienner; and "Discriminatory Practices" by A. J. Weiss of the Anti-Defamation League. Two meetings this year have been devoted to non-controversial topics—the October meeting, at which the Chapter's Honor Scroll was presented to Dr. Otto Eisenschiml, and the January meeting, at which Honorary Membership was conferred upon Prof. Roger Adams.

Preparations are underway for the presentation of Student Awards to representatives from twelve midwestern colleges and universities. This number represents an expansion over previous practice, and further enlargement of this activity, in accord with the increased area encompassed by the Chapter, is under consideration by the Student Award Committee, headed by Dr. C. A. Johnson of the University of Illinois.

Miss Mary Alexander, chairman of the Public Relations Committee, has been instrumental in obtaining excellent press coverage of the Chapter's activities. A recent release which she prepared in co-operation with the science editor of one of the Chicago newspapers gave nationwide publicity to the little-known contributions of Chicago area chemists to the welfare of the nation.

The achievements mentioned above stand out as the major accomplishments of a group of 14 committees which carry on the Chapter activities. The steady

growth of the Chapter and the manner in which its members carry out their committee projects reflect the need for an active professional organization and the faith of its members in the ability of the INSTITUTE to fulfill that need.

Dr. Herman S. Bloch, *Chairman*

### Los Angeles Chapter

The Chapter has had a continued growth in membership over the past year.

Two general meetings were held with fairly good attendance on vital topics. One of the meetings, a symposium on smog, aroused a great deal of interest and resulted in the acquisition of several new members.

The members have been polled, and honorary memberships will be awarded to outstanding West Coast chemists, beginning in the early fall.

A major professional activity has been the active participation in the Technical Societies Council, with Secretary Tubis acting as delegate from THE AMERICAN INSTITUTE OF CHEMISTS. Mr. Tubis has been elected a member of the Board of Directors of the Technical Societies Council. The Council by publishing its new Technical Digest, provides the Los Angeles Chapter and the other engineering and technical societies with a joint publication.

We are planning to serve on the Committees of Vocational Guidance, Public Relations, and Disaster Relief of the Council.

The Chapter looks forward to a more fruitful year.

—Manuel Tubis, *Secretary*

### Louisiana Chapter

The first meeting of the year, of the Louisiana Chapter, was held as a social meeting, June 10, 1949. A brief business meeting preceded the social part of the evening. In view of the fact that most members of the Chapter are also members of other scientific societies, it was felt that the Chapter would not attempt to sponsor strictly scientific meetings by itself but rather arrange cooperation with other groups for such meetings.

After members of the AIC, not in local chapters, were assigned to the nearest

local chapter, the Chairman of the Louisiana Chapter, Dr. J. David Reid, spoke at an INSTITUTE Breakfast at the Fifth Southwest Regional Meeting of the American Chemical Society. Members of the Louisiana Section from the recently assigned states of Texas, Arkansas, and Oklahoma were present. It was agreed that a luncheon or dinner meeting of the AIC should be sponsored by the INSTITUTE at each National and Sectional Meeting of the American Chemical Society. The National Officers should make arrangements with local members in the same manner in which dinners are arranged for by University groups at the ACS Meetings.

—Dr. J. David Reid, *Chairman*

### New York Chapter

By the close of the present year, the New York Chapter will have conducted six regular meetings, a somewhat larger program than usual. The gatherings were evenly divided between discussion forums and semi-formal dinners. The former type continue to be quite acceptable to our group. Topics are selected by the Council as being of interest to the membership, and stated in the form of questions. Competent speakers are invited to talk briefly—ten or fifteen minutes on each side of the question—and the remainder of the meeting is given to discussion from the floor, with the Chairman functioning as a moderator. Interest has been sufficiently keen that it is frequently difficult to adjourn at a desired time and the audience remained to the end.

At one of these meetings, after exceedingly enthusiastic debate, the Chapter went formally on record as favoring the initiation of activities which would ultimately lead to the licensure of chemists in New York State. While it is obvious that there is much ground work to be done before that decision can be furthered much, there is a clear mandate for future officers of the Chapter to consider.

The dinner meetings have likewise been gratifying well attended. The Honorary Membership dinner was this year tendered to Mr. Frank G. Breyer and was an event which not only afforded satisfaction, we hope, to our guests, but also to the hardworking Com-

mittee on Arrangements and to the Treasurer. It would be ungrateful not to say in that connection that that conspicuous achievement was to no small degree due to the excellent cooperation of the firm of Singmaster and Breyer.

There is every reason to believe that our final meeting of the year on May 24th at the Hotel Commodore, at which, in addition to the regular program, Dr. Wayne Kuhn of The Texas Co. will receive the Honor Award for this year, will surpass the records attained last year.

Chapter membership has been maintained at the currently high levels. With the recent appointment of Prof. Charles J. Marsel as chairman of the Membership Committee, it is hoped that that important activity will be given a fresh stimulus, and will again move forward.

The Chapter Council has this year continued regular monthly meetings. Last year the Chapter saw fit to re-elect its officers for a second year. That has given the activities then initiated and described in last year's report, a degree of continuity which has contributed to their growth. All are progressing, and Harry Bennett's Chemist's Advisory Committee has reached a state of systematic and permanent organization which will enable it to render increasingly valuable service to the INSTITUTE. An outstanding new activity approved by the Council and now in the stage of preliminary organization is a very pretentious and substantial proposal of Dr. Walter Baeza that the Chapter conduct a Chemists' Employment Agency. At the moment the problem being deliberated is that of financing, but there can be little doubt that if this plan can be successfully accomplished, it would be the greatest single contribution to the welfare of local chemists that has been made by any organization up to the present, and its service may ultimately extend far beyond the jurisdiction of the New York Chapter.

Owing to several very fortunate circumstances the financial affairs of the Chapter appear likely to be in a very healthy condition as the year ends. That is a source of gratification to the present chairman as it undoubtedly will be to the incoming one. The present chairman

## LOCAL CHAPTER NEWS

is about to retire after two years of service and takes this opportunity to thank all of those who have so capably and generously cooperated with him. The existence of that spirit of cooperation makes it possible to predict, in concluding this annual report, that the New York Chapter will go on under its new officers, to greater achievements that it has made up to now.

—Dr. Martin Meyer, *Chairman*

### Niagara Chapter

The topics of the speaker at all four meetings which have been held to date were designed to be more professional than scientific in character. All the principal speakers are members of the chapter. On October 5, 1949, James Ogilvie chairman of the chapter, spoke on "Chemistry and Esthetics", and gave a philosophic and scientific account of the influence of chemistry on human adornment.

On December 7, 1949, Albert E. Jennings spoke on "Educating for Industry's Needs" and discussed, on the basis of his experience in hiring chemists for industrial work, the ways in which the colleges can better train them for this work and what industry should do to orient them for the jobs for which they are best suited.

On February 1, 1950, the chapter met at Canisius College, Buffalo, to recognize the distinguished services to the profession of one of its own members, Dr. Alexander Schwarcman, research director of the Spencer, Kellogg Company, who was presented with Honorary A.I.C. membership by President Lawrence H. Flett. Ward B. Arbury LL.B. spoke on "Dr. Schwarcman — The Man", and James Ogilvie on "Dr. Schwarcman — The Chemist." An account of this meeting was given in *THE CHEMIST*, March 1950.

At the February meeting it was unanimously voted to conduct a survey of pension plans which chemical companies and educational institutions in upstate New York provide for their chemists. This survey was conducted by questionnaire. The response was very gratifying. The members of the Niagara Chapter are employed by 75 companies and institutions and the pension plans of about 50 of these were received. On April 5, 1950 Dr. C. H. Rasch F.A.I.C., discussed the results of this analysis of this survey.

As a result of geographical rearrangement of chapters, the Niagara Chapter now includes members who reside as far east as Albany so that the membership is now about 120. The meetings which are held alternately in Niagara Falls and Buffalo are consistently attended by at least one-third of the members who live in the Niagara frontier and it is excusable that those who live in Rochester and points east are unable to attend. It is suggested that one of next season's meetings be held in either Rochester or Syracuse.

The last meeting of the season will be held at Canisius College, Buffalo, on June 7th, at which the student medal awards will be made, and James J. Pallace, S.J., F.A.I.C., will give a talk on "Antihistaminics."

James Ogilvie, *Chairman*

### Ohio Chapter

Following is the report of the Ohio Chapter from its formation to its Annual Meeting on April 27th, at the Hotel Carter in Cleveland.

At the 1948 spring meeting, in Akron, of the Northern Ohio Chapter it was voted unanimously to petition the National Council to withdraw their charter, and at the same time issue a charter for an Ohio Chapter.

The National Council acted favorably upon this petition and as a result an "Interim Committee" was formed which drew up a set of by-laws and conducted an election of officers for the newly created chapter. The adoption of the by-laws and the results of the election were approved by the National Council.

On April 8, 1949, an Executive Committee meeting was held at the Fort Hayes Hotel in Columbus. A complete report of this meeting was forwarded to the National Council. Highlights of this meeting are noted as follows: An annual award of a bronze medal to an honor student at an Ohio College or University. The activities in the various Districts are to be under the direction of their respective directors.

As a result, on June 10, 1949, a student medal was awarded to Giles Edward Blind at the 100th commencement of the University of Cincinnati, by Director Simon Mendelsohn.

In September 1949, a picnic was held at Linwood Park, forty miles west of Cleveland on the shore of Lake Erie. A good time was had by those attending.

The only other activity to come to the attention of the Secretary was the participation in the first annual Professional Chemists Dinner, on Nov. 29, 1949, in Cleveland. Other sponsoring groups were the American Chemical Society, The American Institute of Chemical Engineers and the Electrochemical Society.

The first Annual Meeting was held at The Carter Hotel in Cleveland on April 27, 1950. After the business meeting in the afternoon, Dr. Harry N. Holmes of Oberlin College talked on "National Problems and the Chemist." The evening was devoted to an informal reception, a filet mignon dinner, and a program awarding an Honorary Membership to Dr. James R. Withrow, Professor Emeritus of Ohio State University Department of Chemistry and Chemical Engineering.

—Robert B. Waters, *Chairman*

### Pennsylvania Chapter

At the final meeting of the 1948-1949 fiscal year held at the Engineers' Club, Philadelphia, an announcement of the election of the following officers was made:

*Chairman*: Hillary Robinette, Jr.

*Vice-Chairman*: Charles P. Neidig

*Secretary-Treasurer*: John H. Staub

*Council Representative*:

Charles W. Rivise

At that meeting we were honored to have with us our national president Lawrence H. Flett, who presented to Dr. Edward R. Weidlein, director of the Mellon Institute, on behalf of the Pennsylvania Chapter, Honorary Membership in the INSTITUTE.

The first meeting of the 1949-1950 season was held on October 6, 1949. The speakers of the evening were Marcus Sittenfeld, consultant, who spoke on "Air Pollution in the Chemical Industry" and Harry Harp, member of the Air Pollution Control Group of Philadelphia, who spoke on Air Pollution control in Philadelphia.

On January 5, 1950, we were afforded the opportunity of hearing Dr. Walter J. Murphy, A.I.C. Medalist for 1950. Dr. Murphy's subject, "The Challenge of

Professionalism" was very interesting and evoked much discussion.

The February meeting, held jointly with the Philadelphia Section of the A.C.S. on February 16, 1950, at the Franklin Institute was addressed by Dr. J. C. Warner, president-elect of the Carnegie Institute of Technology. Dr. Warner spoke on "The Contribution of Science and Scientists to the Goals of Civilization."

The final meeting of the season will be held on May 4th, 1950. Dr. Joseph W. E. Harrisson of LaWall and Harrisson will be the principal speaker of the evening. A new slate of officers will be elected for the 1950-1951 fiscal year.

—Hillary Robinette, Jr. *Chairman*

### Washington Chapter

The activities of the Washington Chapter for the year 1949-1950 have been both meager and belated. Ever since the removal of so many chemists of the Department of Agriculture from Washington to the Regional Laboratories, the Washington Chapter has had a hard struggle to maintain chapter activities. The number of members in Washington has grown and there is no reason to believe that these members are lacking in interest in the INSTITUTE or to any extent unappreciative of the honor of membership or of the functions and opportunities of the national organization. Washington is a city of many organizations and meetings, largely devoted to scientific and technical subjects, and it is very hard to get a respectably sized group to attend an evening meeting of an organization of such general scope as ours.

Accordingly we tried the experiment of not calling a meeting until there seemed to be a demand and an assurance of interest. In the meantime a study was made as to the possible interest of the chapter members in committees in which an individual could carry out assignments at convenient times and without the necessity of frequent meetings. A mail poll of the membership elicited about 40 per cent response and about three-fourths were in favor of stressing committee work rather than the usual type of meetings.

Efforts are now being made which will carry over into next year to concentrate

## LOCAL CHAPTER NEWS

our efforts on two committees, one to deal with students and the other on manpower problems of all types. An evening meeting was called to discuss INSTITUTE affairs and about a dozen attended. As this report is written, about the same number have agreed to attend a noon luncheon in the city, and an equal number have expressed interest in a similar luncheon at Beltsville, Maryland, where most Department of Agriculture members are located.

To sum up the Chapter's powers are largely latent and there appears some hope of increasing activity and usefulness in a very strategic location.

—Dr. W. T. Read, *Chairman*



### A Column of Advice on Personal Problems

Please send all requests to Chemists' Advisory Committee, c/o The Chemist, 60 East 42nd Street, New York 17, N.Y.

No answer can be complete or entirely satisfactory. The committee or one of its members will be glad to meet with individuals by appointment, for further discussion of their problems.

*Inquiry No. 97*

I am just beginning work in the consulting field. I have been engaged for a continuing project for an organization which has been very cordial and cooperative. They seem to be satisfied with the work which I have done, but as yet have not paid me for my services. How can I encourage them to do so without antagonism?

### *Answer*

Difficulties will often arise in money matters unless terms are clearly outlined at the outset and the arrangements are covered by a written document outlining the work to be done and the fees to be paid for the work. Assuming that terms have been agreed upon, one convenient way of avoiding misunderstandings is to submit bills for services during the course of the work, promptly at the end of each month. A reputable company will usually honor such bills promptly. It should be understood that in dealings with large organizations, government agencies, or foreign companies, considerable delay in payment is often unavoidable. In the event of eventual non-payment, recourse may be made to a collection agency or lawyer.

*Inquiry No. 99*

I am not satisfied with the progress I have been making with my present employer. Although they are a good firm to work for, I feel that I am capable of handling greater responsibility.

A few of my friends have advised me to contact another potential employer to obtain an offer and then confront my present employer with it with the hope that he will thereby be stimulated to give me a position with greater responsibility. I am somewhat dubious about the ethics of this procedure.

What do you advise?

### *Answer*

The committee is of the opinion that your present employer would not resent your frankly telling him that you are dissatisfied and are considering looking elsewhere. Any worthwhile employer would treat you fairly and attempt to utilize any true potentialities you may have.

Needless to say, there is nothing unethical about contacting another company in good faith, obtaining an offer, if possible, and then informing your present employer. If he should make you a counter-offer, there is no good reason why you should not consider it as a separate proposition and accept the one most advantageous to you.

## Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

• Verlag M. & H. Schaper, Hannover: *Vitamine und Hormone*, by Hans-Adalbert Schweigart, 132 pp. and 12 tables, DM 12. This is volume 1 of a work entitled "Ergozyme," according to v. Euler's nomenclature. Systematically each vitamin is briefly described relative to its history; chemical determinations; chemical characteristics; biological, physiological, prophylactic and therapeutic properties; natural sources, and preservation. However, drawbacks of the volume are that it lists too many vitamins—many not yet or no longer recognized—and that it dedicates only 17 pages to hormones of human, animal, and plant organisms.

• Editio Cantor, Aulendorf / Wuerz.: *Vitamine und Vitaminpräparate*, by Alfred Hotzel, 1949, 432 pp., DM 39. Here again we find many vitamins discussed which are not recognized as such any longer; otherwise it is a valuable work addressed to those who have to do with the production of vitamin preparations from natural sources or by means of synthesis. Author abstracted 1382 patents (many of only historical interest) from 21 countries (302 from Germany, 236 from England, 215 from U.S.A., 151 from France, 12 from Russia, 6 from Italy etc.) in a manner which makes it easy to duplicate the procedures i.e., free from legal phraseology. A second volume, supplementing this interesting compilation which ends with the year 1944, should be a worthwhile contribution to the field of vitamin chemistry.

• Wissenschaftliche Verlagsgesellschaft m.b.H., Stuttgart: *Pharmakologische Methoden*, by L. Ther, 1949, 420 pp., 244 ill., DM 32. This is an important book—an almost complete review of the modern pharmacological methods for the detection of medical agents and poisons and for the analysis and evaluation of their mode of action. Only methods dealing with metabolism, vitamins and hormones are omitted.

• Ferdinand Enke, Stuttgart: *Analytische Chemie der Düngemittel*, by S. Gericke, 1949, 191 pp., 19 ill., DM 26. Volume 46 of Boettger's symposium on chemical an-

alysis contains all the analytical methods necessary for use in connection with the fertilizer industry. Typical analyses of various types of fertilizer are listed in 49 tables. It is a little book full of valuable facts and figures.

• Verlag fuer chemische Industrie H. Ziolkowsky, Augsburg: *Kosmetisches Praktikum*, by H. Janistynis. A collection of small booklets (32 to 300 pp.) dealing with such subjects as cosmetics for the skin (part 2, volume B), cosmetics for the feet (part 6), and cosmetics for the mouth (part 3). Text and formulas are selected reprints of articles previously published in German chemical journals.

• Hippokrates-Ferlag Marquart & Cie., Stuttgart: *Das neuzeitliche Krauterbuch*, Part 1, by Ludwig Kroeber, 4th ed., 454 pp., 119 ill., DM 21.50. Monographs of 146 plants used in medicine are contained in this volume (and 104 more in part 2, while 128 poisonous plants make up part 3, and approximately 800 prescriptions are collected in part 4). It is a standard work for anyone interested in plants and their usage. The author has endeavored to cover everything known as to their biology, history, toxicology, antidotes, chemical and medical uses, dosages, etc. Hundreds of literature sources increase the scientific value of the work.

• Longmans, Green & Co., London (also New York and Toronto): *A New Dictionary of Chemistry*, by Stephen Mial and L. Mackenzie Mial, 2nd Ed., 589 pp. \$12.00. A handy reference book not only for chemists, but also for others who need accurate information on chemical matters, e.g., physicians, pharmacists, lawyers, journalists, etc. Its thousands of articles are brief and dependable and they include even the latest sulfonamides and recent discoveries in the field of atomic research. Many biographies of outstanding chemists and a table of physical constants of 1800 organic compounds are included in this book which, no doubt, will be a welcome addition to the library of any scientist, writer, and reader of professional literature.

### Toward a Stable World Economy

The transition period from war to a peacetime economy is almost over. Expansion and reconstruction are slowing up, and the industry is seeking a firm foundation in a stable economy. Uneconomic production, often a necessity in war, is no longer condoned . . .

The present problem is to direct the energies of the world chemical industry toward those products and markets which will produce the most economic good for everybody—the chemical producer included. Indeed, to assure a profitable operation for himself, the manufacturer of chemical products, in the United States as well as abroad, will do well to approach the future with economic foresight, to plan—barring the possibility of a hot war—on the basis of a world economy, to discover new products and new markets, and to operate insofar as circumstances and controls permit, in line with the law of comparative advantage. In the final analysis, a stable and productive world economy would undoubtedly be the greatest single deterrent to a third World War.

—C. C. Concannon, F.A.I.C.

### Acheson Opens Division Sales Headquarters

Howard A. Acheson, president of Acheson Colloids Corporation, Port Huron, Michigan, has announced the opening of the Dispersed Pigments

Division of the company at 420 Lexington Avenue, New York, N. Y. The company disperses pigments for paints, coatings, inks, textiles and other products, including plastics.

Acheson has specialized for many years in the colloidal dispersion of solids in liquid carriers, including the colloidal graphite dispersions in various forms sold under the trade name, "dag" colloidal graphite. In recent years experiments with colorants have been going forward in the Acheson laboratories. For more than a year, these products have been used by major molding powder manufacturers.

Dispersed colorants offer many advantages over dry colors. They extend readily and perfectly in the carrier. They give superb color with less pigment, or greater tintorial value for a given quantity. They are dustless and cause no contamination of batches or products on adjacent machines. Clean-up between runs is, for the same reason, much quicker than usual.

Acheson now stocks a variety of concentrated carbon black dispersions in polystyrene, polyethylene, ethyl cellulose, cellulose acetate, the vinyls, and plasticizers. These come either as colloidalized colorants incorporated in resins, which are subsequently finely granulated for convenience, or in plasticizers marketed as readily extendible pastes. Other colors in the form of pigments or dyes are

dispersed to order in any desired carrier.

The new department headquarters and staff at 420 Lexington Avenue is separate from Acheson's Graphite Division at 50 Church Street.

#### **Snell Offers New Service**

Foster D. Snell, F.A.I.C., president of Foster D. Snell, Inc., announces the availability of "FDS Artificially Soiled Wool" fabric, as an added service to manufacturers and users of soaps and synthetic detergents. The wool complements the "Standard PSC Soiled Cotton" fabric introduced last spring, which is prepared under the direction of Dr. Pauline Beery Mack, F.A.I.C., of Pennsylvania State College. Information may be secured from Foster D. Snell, Inc., 29 West 15th St., New York 11, N.Y.

#### **Chemist Elected to Board**

The election of a research chemist to the Board of Directors of E. F. Houghton & Co., was a feature of the stockholders annual meeting held in Philadelphia, February 14th. Dr. James T. Eaton, manager of research, was named to the board. Dr. R. H. Patch, F.A.I.C., was reelected vice president in charge of Operations.

Leonard C. Cartwright, F.A.I.C., of Foster D. Snell, Inc., spoke on "Organoleptic Panel Testing as a Research Tool," at the Association of Medical Directors' Luncheon held May fifth in New York, N.Y.

#### **Simonoff to National Aniline**

Dr. Robert Simonoff, F.A.I.C., recently on Fellowship at the School of Medicine, University of Maryland, is now research chemist at the National Aniline Division of Allied Chemical and Dye Corporation, Buffalo, New York.

#### **Mason Appointed**

Howard Farkas, F.A.I.C., executive vice president of The U.S. Stoneware Co. and its affiliated companies, announces the appointment of Donald E. Mason as General Sales Manager of Colonial Rubber Company, Ravenna, Ohio. Mr. Mason was formerly associated with Atlas Powder Company and B. F. Goodrich Company.

Dr. Albert C. Walker, F.A.I.C., of the Bell Telephone Laboratories, spoke before the Central Ohio Valley Section of the American Chemical Society, in Ashland, West Virginia, recently, on "The Growth of Crystals."

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## Necrology

### Hugh M. Huffman

Hugh M. Huffman, fifty-one, head of the thermodynamic section of the petroleum and Natural Gas Branch of the United States Bureau of Mines at Bartlesville, Oklahoma, died, January fourth, of a heart ailment after a short illness.

Dr. Huffman received his academic training at Stanford University, being graduated with the Ph.D. degree in 1928. He remained at Stanford as an API Fellow until 1931, continuing low temperature calorimetric studies. In 1931, the still valuable ACS Monograph No. 60, *Free Energies of some Organic Compounds* by George D. Parks and Hugh M. Huffman was published.

From 1931 to 1943, Dr. Huffman was assistant professor of biochemistry at the California Institute of Technology, where he carried out an extensive series of determinations of the low temperature thermal properties and heats of combustion of biologically important molecules. This established him as an outstanding calorimetrist.

In 1943, Dr. Huffman was invited to establish a thermodynamic research laboratory for the U.S. Bureau of Mines Petroleum and Natural Gas Branch in Bartlesville, Oklahoma. Under his leadership this laboratory has become an important

factor in thermodynamic research.

In 1946, Dr. Huffman initiated an annual meeting of leading low temperature calorimetrists. The "Conference on Low Temperature Calorimetry" now meets once a year at one of the national ACS meetings, and has brought about many improvements and efficiencies in techniques, procedures and programs. Dr. Huffman was also a member of the National Research Council Committee on Physical Chemistry and was chairman of its Sub-Committee on Physico-Chemical Standards. He served as a member of the International Union of Chemistry Commission on Thermochemistry and was an associate director of the American Petroleum Institute's Project 48A. He became a Fellow of the American Institute of Chemists in 1948.

The fifty-odd papers in the literature which bears his name will long be a tribute to the standards of excellence to which he unfailingly adhered.

—G. W.



To the Editor:

I have just finished reading the February issue of *THE CHEMIST* and was tremendously impressed with the address of Roger Adams, entitled, "An Educator Observes the Chemist," which was published in that issue.

—Dr. O. E. May, F.A.I.C.

## Condensates

Ed. F. Degering, F.A.I.C.  
*Armour Research Foundation*

No intelligent citizen will disagree with General Eisenhower's statement that the strongest weapon we have against foreign aggression is our ability and capacity for production. We are likely, being an imaginative people, to be impatient of grubby fundamentals, to give first place to jet planes, to the atomic bomb. Production is prosaic, and furthermore, an old story to Americans.

The ability to produce quickly and in great quantities everything from butter to battleships is a matter of know-how. The capacity to produce is due to a system by which savings flow voluntarily into new developments of products and methods of producing them in quantity. Also, this capacity to produce is due to mass selling,

the twin brother of mass production and likewise an exclusive American tool. The union of the two has given us an expanding economy which is the envy of all other countries.

—W. Alton Jones

Worry is like a rocking chair—it will give you something to do but it won't get you anywhere.

—*The Lion's Tale*

When you copy from one book, it is just plagiarism; only when you copy from twenty books, it is research.

—Piper in

*South African Journal of Science*

Every man has two educations—that which is given to him, and that which he gives to himself. What we are merely taught seldom nourishes the mind like that which we teach ourselves.

—*Bulletin*

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The fundamental difficulty with students  
who enter industry is not aptitude but at-  
titude. The present attitude arises from  
the emphasis which has been put in times  
past upon vocational training rather than  
upon educational attitude toward learning.  
Thus, the graduate has tended to think  
of himself as someone who is prepared  
to do something, rather than as someone  
who is equipped to learn something.

—Ernst Mahler

Money may be the husk of many things,  
but not the kernel. It brings you food, but  
not appetite; medicine, but not health;  
acquaintances, but not friends; servants,  
but not faithfulness; days of joy, but not  
peace or happiness.

—Henrik Ibsen

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